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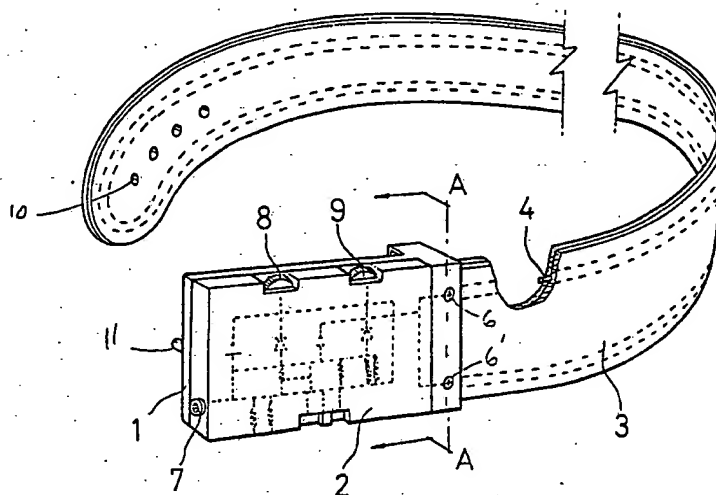
(56) Documents cited
GB A 2088617 GB 1601447

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(54) **Radio receiving apparatus**

(57) A waist belt comprises a length of belt material 3 and a buckle 1, on which is mounted a radio receiver 2. Two screws 6 and 6' fix the belt material 3 to the buckle 1 and also connect the radio receiver 2 circuitry to the ends of an antenna 4 which is buried inside and runs along the length of the belt material 3. Such an arrangement is relatively compact, light and robust and provides a convenient location for the antenna.

FIG.1



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RADIO RECEIVING APPARATUS

This invention relates to a waist belt comprising a radio receiver and a receiving antenna buried inside the material (for example leather or plastics material) of the belt.

There have recently been developed means for attaching a radio receiving set and/or tape recorder on a waist belt or glasses. A ball point pen which contains a radio set within its body has also been developed.

The known waist belt which incorporates a radio receiving set weighs a lot and is inconvenient in that it could be lost or dropped when walking quickly or in crowds. Glasses incorporating a receiving set have also been defective in that they weigh too much to wear comfortably; further the whole structure of the glasses has to be changed in order to contain the radio set. Ball point pens or fountain pens incorporating radios have also been found to have some faults, such as the fact that they break easily or that they distort the sound when writing.

A further particular problem with waist band radios is that, when they are worn attached to a belt (such as by a clip) in a conventional way, they are relatively exposed and prone to impact, which may cause damage.

There is an additional difficulty in providing an aerial or antenna. Amplitude modulated (AM) radios can work quite satisfactorily with a ferrite core, but this form of aerial is not suitable for the reception of

frequency modulated (FM) signals, which are generally of a higher broadcast quality than their AM counterparts. It is therefore necessary or at least highly desirable to use, for FM reception, an aerial in the form of a wire, band or other elongate conducting element which will for preference and convenience be flexible. It is known to use an earphone lead as an antenna, but this restricts the radio to being used with an earphone, or with a speaker connected by a relatively lengthy speaker lead. A further problem with this arrangement is apparent when the earphone lead extends generally vertically upwards from a waist belt to the ear. Some countries broadcast horizontally polarised FM radio signals, whose reception is generally not good with a vertically aligned aerial.

According to this invention a waist belt comprises a length of belt material and a buckle, the buckle comprising a radio receiver, and a receiving antenna being mounted along at least part of the length of the belt material.

The radio receiver is preferably housed within a cover for the buckle. The receiving antenna is preferably buried within the belt material, for example by being sandwiched between two layers. The antenna will for preference extend substantially along the whole length of the belt material.

Thus the invention has the advantage of an outward appearance which may be similar to that of a waist belt and comprising a length of belt material and a buckle. Such an arrangement may reduce the chances of damage to

the radio receiving apparatus and loss of any part of it as the radio receiver may be unexposed and, with the antenna, firmly fixed in the waist belt. It is preferred that the radio receiving set is mounted on or inside a metallic or plastic buckle which therefore offers protection on impact and hence reduces the risk of damage.

The buckle is preferably made from steel, or at least has a steel cover.

It is also preferred that the antenna forms a loop inside the belt and that it runs substantially along the whole length of the belt. When the waist belt is worn around the waist this arrangement of the antenna helps ensure that the antenna can receive broadcast radio signals from all directions. It is also found that the antenna, while in this configuration, is preferable over a linear antenna for radio wave reception. The antenna may be a strip of metal or a length of wire.

Preferable materials for the belt include leather or plastics material.

In one embodiment of the invention two metal members are mounted in the buckle near the entrance point of the free end of the belt material into the buckle and pass through and thereby contact with separate ends of the antenna. The metal members serve to hold the buckle and belt together and also provide the connection between the receiving antenna and the radio set. Therefore reception is not likely to be lost even

on considerable movement or impact and there is less likelihood of detachment of the radio set from the belt. It is advantageous that these two metal members are screws for ease of construction.

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The radio set may also be provided with a jack socket. A jack plug therefore, when inserted into the jack socket, may be connected via a lead to an earphone or headphones so that the radio may be heard. The radio receiver may be adapted for stereo reception and the headphones may be a pair of stereo headphones.

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Further to illustrate the invention so that it may be more clearly understood, an embodiment will be described, by way of example, with reference to the accompanying drawings, in which:

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FIGURE 1 is a perspective and part schematic view of a radio receiving apparatus; and

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FIGURE 2 is a cross sectional view along the line A-A of Figure 1.

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Referring to Figure 1, a waist belt comprises a buckle 1, to the front face of which is mounted a radio receiver 2, and a length of belt material 3 inside which is an antenna 4. The radio receiver 2 contains the circuitry necessary to perform the functions of a simple radio. Such circuitry may be that of a standard AM/FM two band radio receiver. A cover for the buckle forms a housing for the radio receiver 2 and is made of steel.

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Terminals 5,5' for the antenna are secured by screws 6,6' to the housing. The radio receiver 2 also comprises a jack socket, a volume control dial 8 and a frequency selection dial 9.

5 The antenna 4 forms a loop, in the shape of an elongate 'U' in the plane of the belt material 3, the antenna 4 generally following the edges of the belt so that the antenna comes back on itself at the end of the belt and around belt fastening holes 10.

10 A small stud 11 protrudes from the back face of one end of the buckle 1 and engages with one of the belt fastening holes 10 when the waist belt is worn.

15 Referring now to Figure 2, the end of the buckle 1 opposite to the end with the stud 11 (that is to say, the end of the buckle 1 permanently attached to the belt material 3) is provided with two rectangular members that extend from either side of the plane of the buckle thereby providing two rectangular slits.

20 The slit so formed on the back face of the buckle is to accommodate the free end portion of the length of belt material with holes 10 when the waist belt is being worn. The slit so formed on the front face of the

25 buckle accommodates the other end of the belt 3 inside which are two terminals of the antenna 5 and 5'. The belt is fixed to the buckle by two screws 6 and 6' which pass through the buckle 1 and the antenna terminals 5 and 5' and thereby provide the connection

30 between the antenna 4 and radio receiver 2.

Referring again to Figure 1, a top edge of the housing

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of the radio receiver 2 is provided with the volume control dial 8 and the tuning (frequency selection) dial 9. Also, at the end of the buckle 1, from which protrudes the stud 11, the radio receiver 2 is provided with a jack socket for connecting, by means of a jack plug, an earpiece or a pair of headphones.

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CLAIMS

1. A waist belt comprising a length of belt material and a buckle, the buckle comprising a radio receiver, and a receiving antenna being mounted along at least part of the length of the belt material.
2. A waist belt as claimed in claim 1 in which the radio receiver is housed within a cover for the buckle.
3. A waist belt as claimed in claim 2, in which the buckle is made of steel.
4. A waist belt as claimed in claim 1, 2 or 3, in which the antenna forms a loop inside the belt material.
5. A waist belt as claimed in any one of claims 1 to 4, in which the antenna runs substantially along the whole length of the belt material.
6. A waist belt as claimed in any one of claims 1 to 5, wherein the antenna is located within the belt material.
7. A waist belt as claimed in any one of claims 1 to 6 in which the antenna is a strip of metal or length of wire.
8. A waist belt as claimed in any one of claims 1 to 7, in which the belt material is leather or plastics material.

9. A waist belt as claimed in any one of claims 1 to 8 in which means for securing the belt material to the buckle also serve to connect the antenna to the radio receiver.

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10. A waist belt as claimed in claim 9 in which the securing means comprise metal screws.

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11. A waist belt as claimed in any one of claims 1 to 10 in which the radio receiver is provided with a jack socket, for an earpiece or headphones.

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12. A waist belt as claimed in any one of claims 1 to 11 in which the radio receiver is a two band AM/FM receiver.

13. A waist belt substantially as herein described with reference to the accompanying drawing.